



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,282	12/20/2001	Ravi K. Sharma	P0511	4030
23735	7590	01/24/2005	EXAMINER	
DIGIMARC CORPORATION 9405 SW GEMINI DRIVE BEAVERTON, OR 97008			JOHNS, ANDREW W	
			ART UNIT	PAPER NUMBER

2621

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/032,282	SHARMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Andrew W. Johns	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 is/are allowed.
- 6) ☒ Claim(s) 9-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Drawings*

1. The drawings filed on 20 December 2001 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-  
5 948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

### *Specification*

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 C.F.R. § 1.75(d)(1) and M.P.E.P. § 608.01(o). Correction of the  
10 following is required: The specification fails to mention or describe setting the polarities of the components of a grid signal in accordance with payload data to be represented thereby, as stipulated in claim 9, or that such payload data serve to convey protocol information, as further stipulated by claim 11.

### *Priority*

15 3. Applicant's claim for domestic priority under 35 U.S.C. § 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. § 112 for claims 9-11 of this application. The provisional application fails to include any mention or description of setting the polarities of the components of a grid  
20 signal in accordance with payload data to be represented thereby, as stipulated in claim 9, or that such payload data serve to convey protocol information, as further stipulated by claim 11, so that the provisional application fails to meet the requirements of 35 U.S.C. § 112, first paragraph, at least for claims 9-11.  
*Claim Rejections - 35 U.S.C. § 103*

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10 5. Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kalker et al. '747 (US 6,577,747 B1), in view of Op De Beeck et al., (US 6,671,388 B1).

15 With respect to claim 9, Kalker et al. '747 teaches a method of encoding a digital object with a watermark that represents payload data, comprising defining a grid signal comprising a plurality of components (i.e. watermark pattern is "tiled" over image to form a "grid"; column 2, lines 54-57) in the Fourier domain (25 in Figure 4); setting the polarities of said components in accordance with payload data to be represented thereby (column 2, lines 53-54; the signs represent the payload data K); and combining said grid signal with the digital content object to digitally watermark same (column 2, lines 57-58); wherein the payload can be discerned from the polarities of the grid signal components (column 5, lines 17-21). However, Kalker et al. '747 fails to specifically teach that the watermark represent calibration data, wherein affine transformation of the digital content object can be discerned from affine transformation of the grid signal, as further required by claim 9.

20 Op De Beeck et al. teaches a substantially similar watermark encoding method that utilizes a tiled watermark pattern (shown in Figure 3, for example) that is substantially similar to the tiled watermark of Kalker et al. '747 (see Figure 3). Furthermore, the tiled watermark pattern of Op De Beeck et al. serves as calibration data that allows an affine transformation of the image to be discerned from the affine transformation of the tiled pattern (column 5, lines 15-34; the

correlation peaks showing the position of the embedded watermark pattern are analyzed to determine the geometric transformations performed on the image data). Because this calibration information of Op De Beeck et al. allows for more reliable recovery of the embedded payload data (column 6, lines 5-25), it would have been obvious to one of ordinary skill in the art to use the tiled pattern of Kalker et al. '747 to discern any affine transformations performed on the image data, so as to improve the payload data recovery therein.

6. Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kalker et al. '747 and Op De Beeck et al. as applied to claim 9 above, and further in view of Su et al. '00 (Article entitled "An Image Watermarking Scheme to Resist Generalized Geometrical Transformations" from the *Proc. SPIE vol. 4209*).

While Kalker et al. '747 and Op De Beeck et al. meet a number of the limitations of the claimed invention, neither specifically teaches that the watermark include other components in addition to those of which the grid signal is comprised, these other components serving to convey additional payload data, as further required by claim 10. However, Su et al. '00 teaches using both spatial domain and Fourier domain watermarks to convey payload data (see the abstract), and further teaches that the use of these different components increases the robustness of the embedding to geometric transformations (see the Abstract). Because Op De Beeck et al. also suggests the importance of countering geometric transformations of the image, it would have been obvious to one of ordinary skill to include the additional components of Su et al. '00 in the Op De Beeck et al. system to increase the robustness to such geometric transformations.

7. Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kalker et al. '747 and Op De Beeck et al. as applied to claim 9 above, and further in view of Kalker et al. '706.

While Kalker et al. '747 and Op De Beeck et al. meet a number of the limitations of the claimed invention, neither specifically teaches that the payload data serves to convey protocol information, as further required by claim 11. However, Kalker et al. '706 teaches a substantially similar watermark encoding method that utilizes a tiled watermark pattern (shown in Figure 2, for example) that is substantially similar to the tiled watermark of Kalker et al. '747 (see Figure 3). Furthermore, the tiled watermark pattern of Kalker et al. '706 serves to convey protocol information (page 6, lines 5-16). Because Kalker et al. '706 suggests that such a tiled watermark pattern can convey such protocol information, it would have been obvious that that the payload data of Kalker et al '747 could have included such information.

***Allowable Subject Matter***

8. Claims 1-8 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches or suggests the invention as variously claimed. Specifically, none of the prior art teaches or suggests segregating digital data into more than two portions, selecting first and second groups of proximate portions and combining them into first and second excerpts, and separately decoding first and second watermarks from the first and second excerpts, as required by claim 1. Furthermore, while Op De Beeck et al. teaches discerning affine transformation information, as discussed more fully above, Op De Beeck et al. fails to teach or suggest discerning first and second transformation information related to affine transformations of first and second watermarks and processing portions of the digital data in accordance with the first and second transformation information to decode the first and second watermarks, respectively, as required by claim 2. Finally, while Ó Ruanaidh et al. teaches the use of the Fourier domain and log-polar mapping, Ó Ruanaidh et al. fails to teach or suggest providing

blocks of digital data in the Fourier domain, accumulating Fourier magnitude data across plural of the blocks, remapping the accumulated data into a log-polar domain, analyzing the remapped accumulated data in accordance with a summed-grid template to discern candidate affine states, determining a characteristic pattern corresponding to the affine state for at least some of the candidate affine states and attempting to decode a watermark from a portion of the digital data in accordance with a first of the candidate affine states and a characteristic pattern determined to correspond thereto, as required by claim 6.

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The various references cited teach the use of watermarks that are resistant to various geometric transformations or which make use of Fourier and log-polar domains. In addition, Nikolaidis et al. teaches embedding watermarks only into regions of the image.

### *Notice to Applicant*

11. The papers filed on 27 March 2002 (certificate of mailing dated 20 March 2002) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 C.F.R. § 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

COPY OF PAPERS  
ORIGINALLY FILED

---

If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 C.F.R. § 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 C.F.R. § 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy

of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

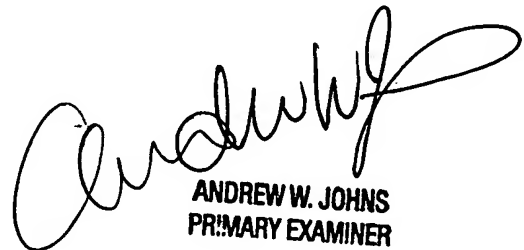
If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent documents submitted with the above-identified papers) with a statement that such copy is a complete and accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers (*i.e.*, the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Johns whose telephone number is (703) 305-4788. The examiner is scheduled to move to the Alexandria Headquarters in February/March 2005. After the move, the examiner's telephone number will be (571) 272-7391. The examiner is normally available Monday through Friday, at least during the hours of 9:00 am to 3:00 pm Eastern Time. The examiner may also be contacted by e-mail using the address: [andrew.johns@uspto.gov](mailto:andrew.johns@uspto.gov). (Applicant is reminded of the Office policy regarding e-mail communications. See M.P.E.P. § 502.03)

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached on (703) 305-4706. The fax phone number for this art unit is (703) 872-9306. In order to ensure prompt delivery to the examiner, all unofficial communications should be clearly labeled as "Draft" or "Unofficial."

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center Receptionist whose telephone number is (703) 305-4700.

A. Johns  
18 January 2005



ANDREW W. JOHNS  
PRIMARY EXAMINER